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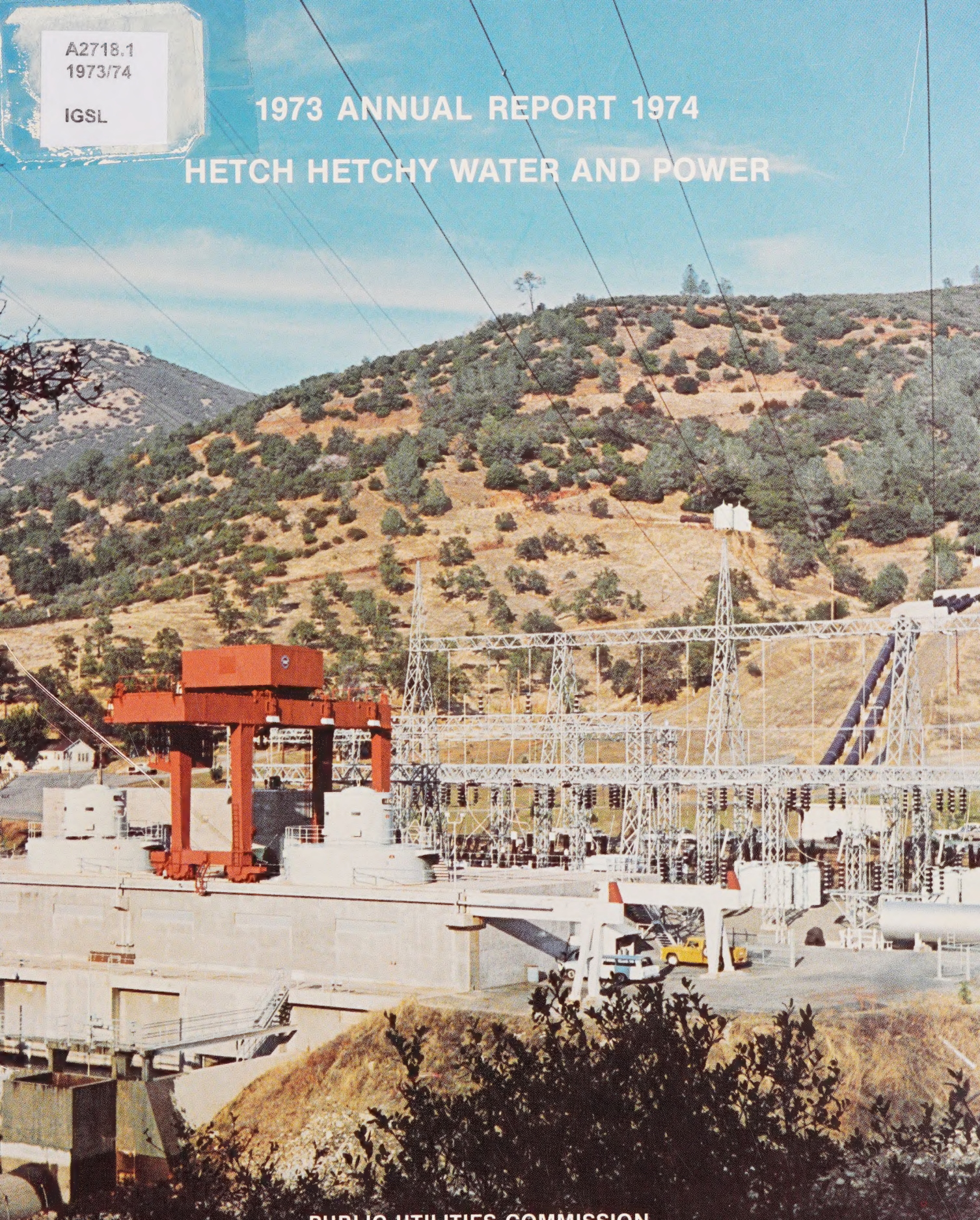
1973 ANNUAL REPORT 1974

HETCH HETCHY WATER AND POWER



PUBLIC UTILITIES COMMISSION

CITY AND COUNTY OF SAN FRANCISCO

MOCCASIN POWERHOUSE

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CITY AND COUNTY OF SAN FRANCISCO

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UNIVERSITY OF CALIFORNIA

ANNUAL REPORT
FISCAL YEAR 1973-74

HETCH HETCHY WATER AND POWER DEPARTMENT

ORAL L. MOORE - General Manager

This report is respectfully dedicated to Hetch Hetchy employees, past and present, whose devoted and conscientious efforts have made possible these accomplishments for San Francisco

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LAKE LLOYD

HIGHLIGHTS - 1973-74

Hetch Hetchy power revenues were $14,104,677; revenue for sale of water and standby service to the San Francisco Water Department was $6 million.

Hetch Hetchy's Transit Power Improvement Program for Muni Railway moved into high gear with the selection of two engineering firms as consultants for design of modifications to the overhead wiring system and of new rectifier substations at strategic locations in the City to meet increased power requirements for Muni's new light rail vehicles.

Actual construction on the program commenced with installation of underground ducts on Judah Street and Nineteenth Avenue. Hetch Hetchy staff engineers are working on plans and specifications for other facilities around the City for undergrounding overhead feeder lines to aesthetically improve the San Francisco environment.

$4.3 million in Hetch Hetchy power revenues were expended this year for the operation, maintenance and improvement of the electrical facilities of the San Francisco Municipal Railway.

Hetch Hetchy furnished power for the Municipal Railway and other City Departments at rates well below those which would have been charged by the Pacific Gas and Electric Company, a further saving to the taxpayers of approximately $3 million.

A total of 414 new City-owned street lighting electroliers were placed in service at a cost exceeding $503,000.

HETCH HETCHY ORGANIZATION AND FUNCTIONS

Under policies established by the San Francisco Public Utilities Commission, the HETCH HETCHY WATER AND POWER DEPARTMENT and the BUREAU OF LIGHT, HEAT AND POWER serve the City and County of San Francisco in the dual function of operating department and service bureau.

Hetch Hetchy is a municipally-owned system of storage reservoirs and aqueducts which collects water from the Tuolumne River watershed and delivers it to the San Francisco Water Department. As a by-product of falling water, Hetch Hetchy operates and maintains hydroelectric generating stations and high voltage transmission lines for the production and distribution of electric energy.

Through its Transit Power Division, Hetch Hetchy has funded, operated, maintained and provided improvements for the electric facilities of the San Francisco Municipal Railway since July 1, 1969.

In order to handle this additional responsibility, Hetch Hetchy assumed control of the equipment and personnel of the Overhead Lines and Motive Power Sections of the Municipal Railway. Personnel for this division includes fifty-two employees in twelve different categories.

All of Hetch Hetchy's expenses, including those of the Transit Power Division, are supported by water and power revenues.

The Bureau of Light, Heat and Power administers contracts for furnishing electric, gas and steam services to municipal departments and handles monthly billings. It also administers contracts for furnishing street lighting services and for operation and maintenance of City-owned street lighting. Financing, design and construction of City-owned street lighting improvements are under the jurisdiction of the Department of Public Works, and plans for these improvements must be approved by the Public Utilities Commission through this Bureau. The Bureau is financed by appropriations from municipal departments and gas tax funds.

For fiscal year 1973-74, the Department administered budgeted funds for all purposes as follows:

Budget	Number of Employees	Total Amount Appropriated
Hetch Hetchy Water and Power	199	$ 17,000,931
Hetch Hetchy Water and Power (Transit Power Division)	52	4,519,694
Bureau of Light, Heat and Power	11	7,566,046
	262	$ 29,076,671

LINDA BORRELLI, Payroll and Personnel Clerk
ETTA MAY LETUAL, Account Clerk

HETCH HETCHY WATER AND POWER SYSTEM

REVENUES AND EXPENDITURES

Revenue from Hetch Hetchy Water and Power operations is derived principally from two sources:

1. Sale of electric power and energy to San Francisco Municipal Departments, Modesto and Turlock Irrigation Districts in the San Joaquin Valley, and four industrial customers:

Kaiser Cement and Gypsum Corporation	Santa Clara County
Kaiser Cement and Chemical Corporation	Santa Clara County
Lockheed Missile and Space Company, Inc.	Santa Clara County
Norris Industries, Riverbank	Stanislaus County

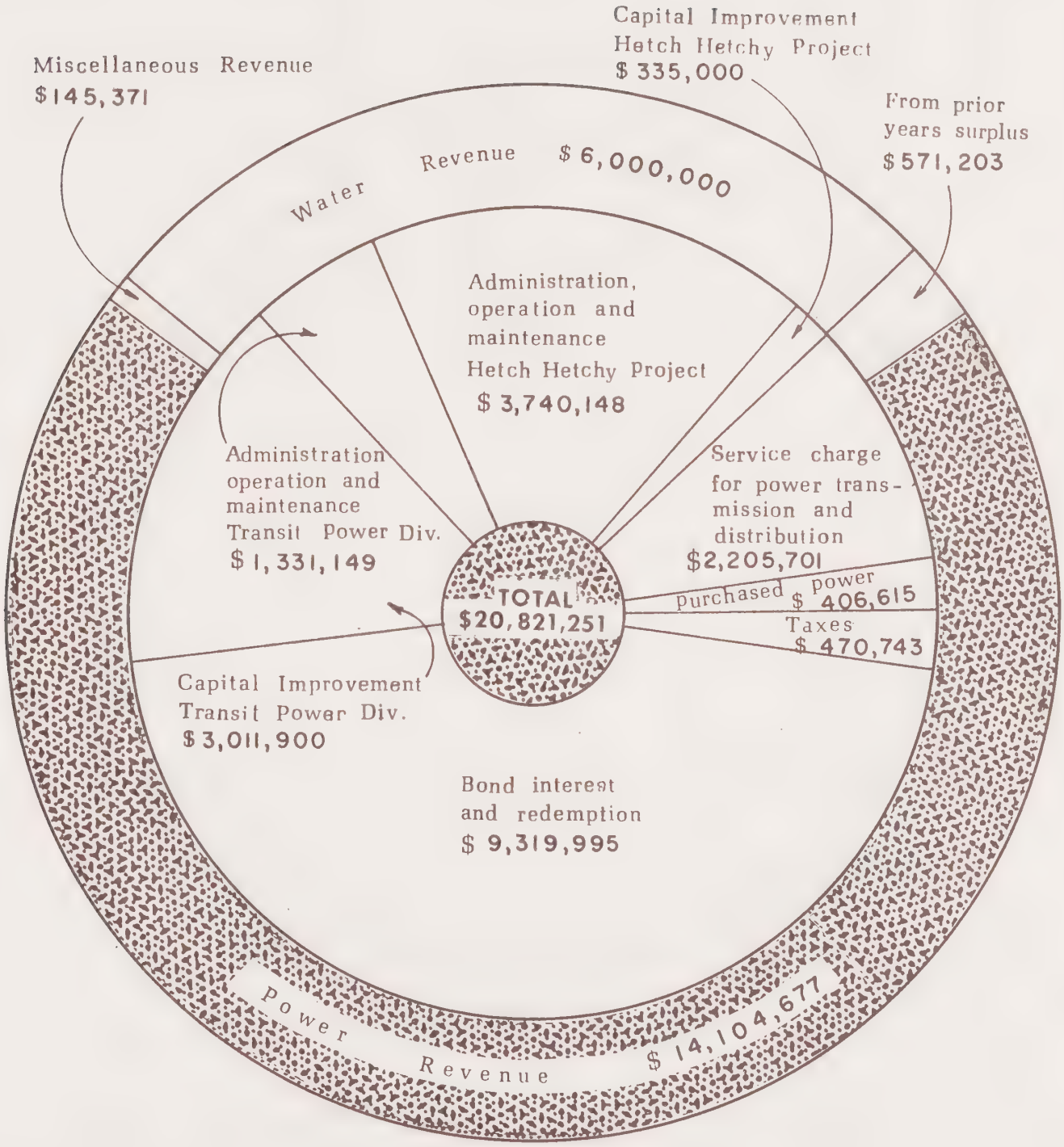
2. Sale of water to the San Francisco Water Department.

   This past year, revenue from sale of water and standby service to the San Francisco Water Department totaled $6 million.

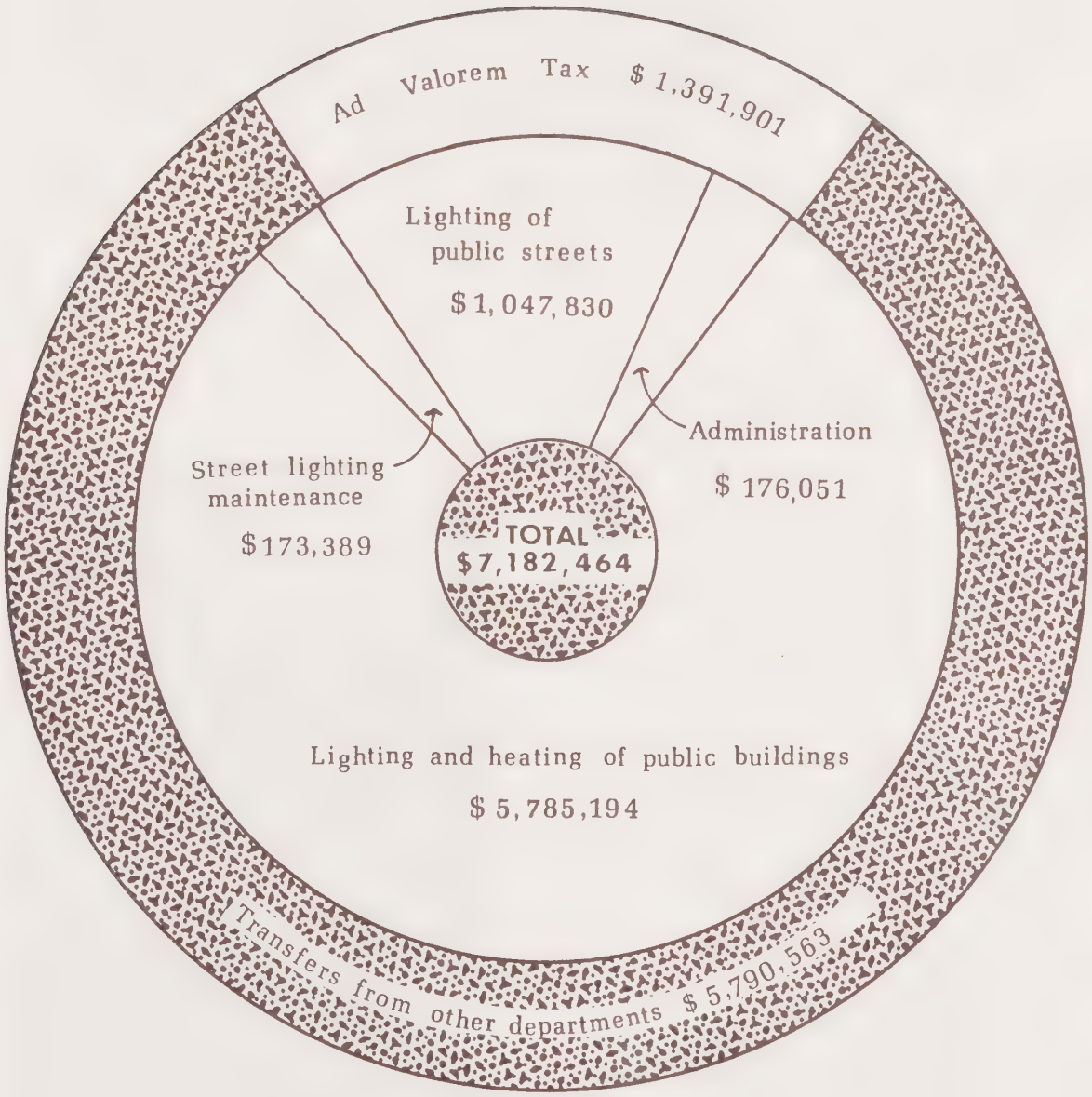
Gross sales of electric energy amounted to $14,018,953, compared with $14,662,650 during the fiscal year 1972-73. This decrease in electric revenue reflected the decrease in actual sales during the fiscal year; 1,823,491,146 Kilowatthours as compared with 1,988,623,127 Kilowatthours for fiscal year 1972-73.

Revenue from service orders, rentals, meals and miscellaneous items totaled $144,734.

Expenditures are summarized on the pie charts following and are detailed in the appendix.



HETCH HETCHY REVENUES
AND EXPENDITURES
FISCAL YEAR 1973-74



BUREAU OF LIGHT, HEAT & POWER

REVENUES AND EXPENDITURES

FISCAL YEAR **1973 – 74**

POWER SALES

Power and energy delivered to all City departments decreased 5.1% below the previous year, the result of voluntary energy conservation efforts which began in October 1973. The San Francisco International Airport, the single biggest energy consumer of the City departments, contributed significantly to the overall result with an 8.3% reduction, which is a complete turnabout from the comparison between 1972-73 and 1971-72.

Hetch Hetchy power is sold to City departments at cost, representing a saving to taxpayers for 1973-74 of approximately $3 million, compared to the cost if supplied by local investor-owned utility at the current rates, which are more than 35% higher than those in effect some three years ago.

GENERATOR
HOLM POWERHOUSE

Power and energy delivered to Modesto Irrigation District, Hetch Hetchy's largest power customer, and to Turlock Irrigation District, the third largest, decreased by 8.3% and 28.2% respectively this year. The reason for the Districts' decrease in purchase is two-fold:

(1) effects of voluntary energy conservation efforts and
(2) more than normal generation available from their own generating plant because of the increased water storage behind Don Pedro Dam.

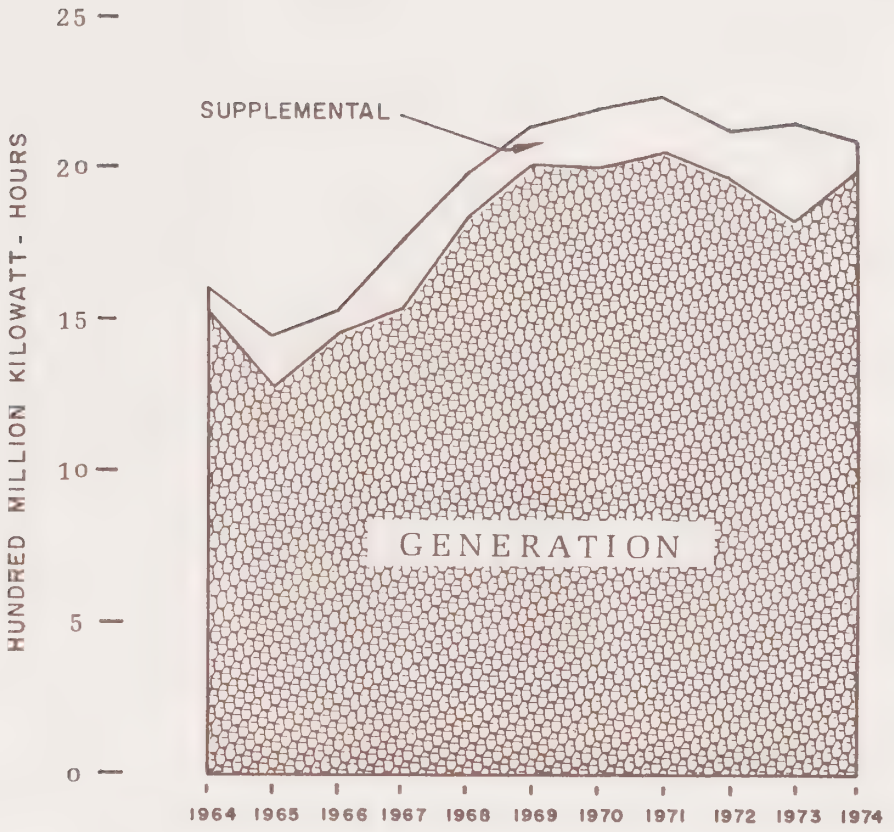
The effect of Don Pedro storage on each of the two Districts is different. It has less effect on Modesto's purchase, since Modesto normally generates less than 20% of its total load requirement. Turlock's share of generation normally accounts for 50% or more of its total requirement which is about half of Modesto's.

Gross sales of electric energy amounted to $14,104,677, compared to $14,662,650 during 1972-73. This decrease in electric revenue is related to the 4.4% decrease in energy sales to customers resulting from voluntary energy conservation efforts. However, total generation available from Hetch Hetchy powerhouses actually increased 10.7%, as compared to 1972-73, because of the above-normal water conditions in the system's watersheds. The favorable effect of this is noted by the decrease in expenditure for supplementing power and energy from $2,239,821 to $447,270.

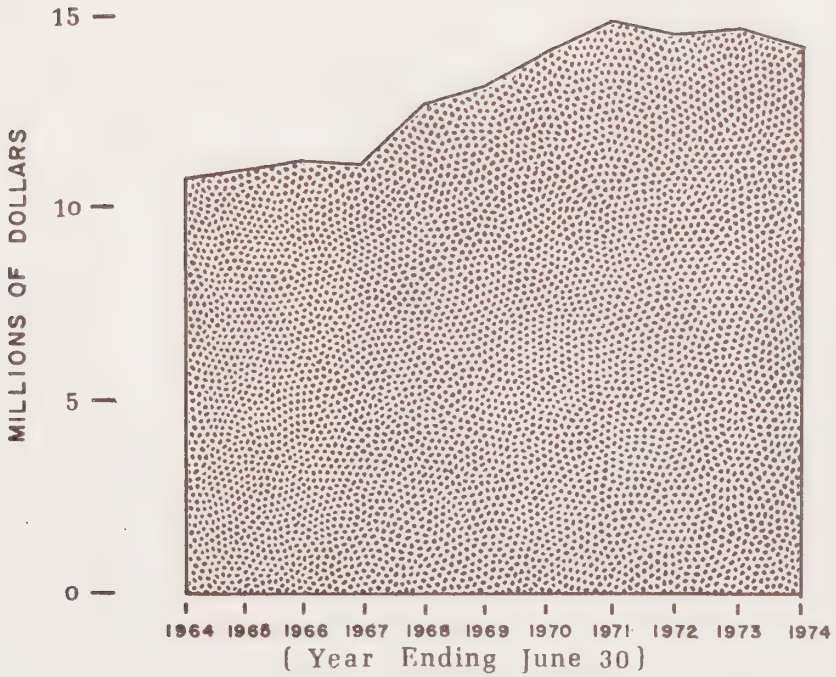
With energy consumption of existing customers running 4.4% below a year ago, and the prospect that both Hetch Hetchy Reservoir and Lake Lloyd would fill and spill before the annual spring runoff was finished, it was anticipated that a quantity of excess energy would be produced that could be sold by City. Such a sales opportunity was provided by the addition of a new industrial customer load in Sunnyvale known as Lockheed No. 1.

Additionally, under our "banking" arrangement with Pacific Gas and Electric Company, we were able to "bank" 130 million kWhrs for "withdrawal" next year to meet City's loads.

CHU SHUN PENG
Assistant Electrical Engineer



HETCH HETCHY POWER SYSTEM OUTPUT



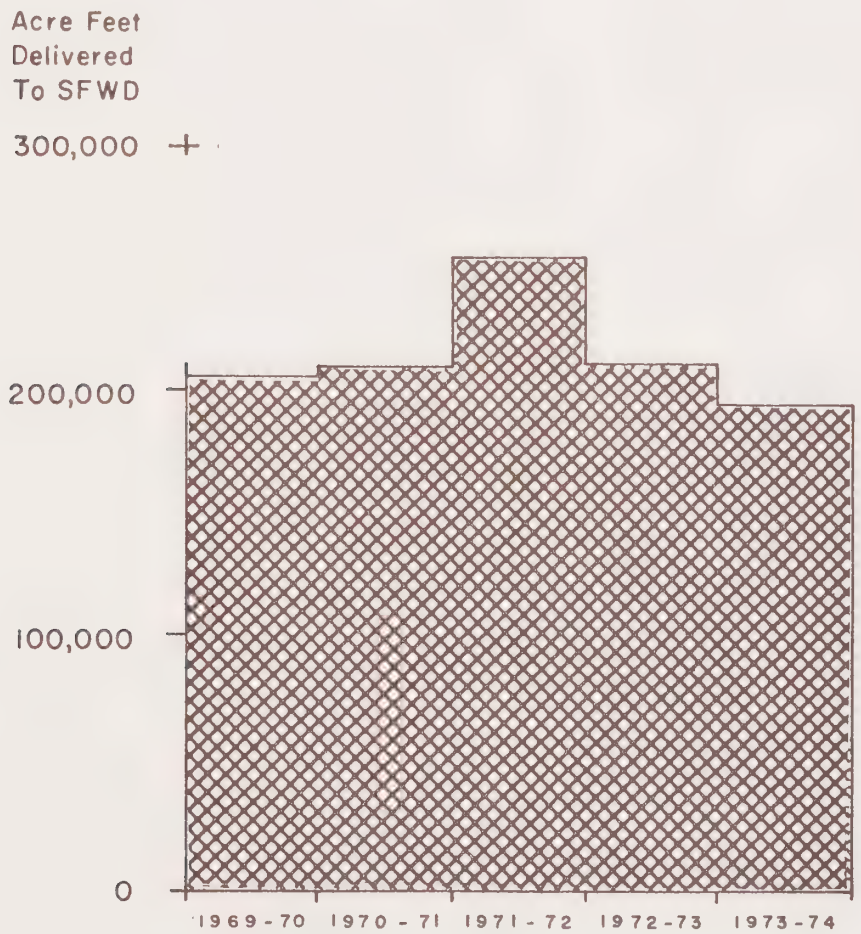
REVENUE FROM SALE OF ELECTRIC ENERGY

WATER PRODUCTION AND TRANSMISSION

Precipitation recorded for the year at our measuring stations was 112% of the long term average.

During the year, 63,058,000,000 gallons of water were diverted from the Tuolumne River watershed through the Hetch Hetchy Aqueduct to the San Francisco Water Department, representing 70% of the City's total customer consumption. In addition, 204,391,748 gallons were delivered to the United States Atomic Energy Commission at Mocho Shaft of the City's Coast Range Tunnel for use at the Lawrence Radiation Laboratory at Livermore; 22,936,904 gallons were delivered to Groveland Community Service District in Tuolumne County from the Mountain Tunnel.

Appendix Table 6 shows comparative data on precipitation, runoff, storage and delivery of the Hetch Hetchy Water Supply System.



DELIVERIES OF WATER TO
SAN FRANCISCO WATER DEPARTMENT

Generator Failure - Holm Powerhouse

An electrical failure occurred in the stator winding of the Unit No. 1 generator at Dion R. Holm Powerhouse on May 18, 1974. The unit was immediately disconnected from the transmission system by protective relays, and investigation of the damage and probable cause was undertaken. Having determined the extent of the damage, repairs were initiated on May 28, 1974, by departmental forces, advised by a representative of the manufacturer.

The work involved the removal of the damaged stator coils from the stator core, repair of the stator core in the area affected by the coil damage, and the installation of seven replacement coils. The repairs were completed and the unit was put back into service on June 28, 1974, about two weeks ahead of schedule.

HAROLD EATON, Shop Supt.
KEN NIX, Welder

OPERATIONS AND MAINTENANCE - TRANSIT POWER DIVISION

The Transit Power Division is responsible for supplying the 600 volt direct current power that is necessary to operate the streetcars and trolley coaches of the San Francisco Municipal Railway.

The Transit Power Division is composed of two sections - the Motive Power Section and the Overhead Lines Section.

Motive Power Section

The Motive Power Section operates and maintains seven substations which convert electric power from 12,000 volts alternating current to 600 volts direct current by means of motor-generators, synchronous converters, and mercury arc rectifiers. The substations operate 24 hours per day, seven days per week, 365 days per year. (See Appendix Table 3 for statistical data.) Motive Power is also responsible for maintaining the electric motors and associated control equipment for operating the cable-winding machinery located in the Cable Car Powerhouse at Washington and Mason Streets.

During the past fiscal year, we have added numerous protective devices to our power conversion equipment to assure a more reliable delivery of power to the Municipal Railway.

Overhead Lines Section

The primary function of the Overhead Lines Section is to maintain, in satisfactory operating condition, the trolley wire overhead facilities and the electric distribution system which conveys power to it. The electric distribution system consists of both overhead lines and underground cables.

Secondary functions include the maintenance of the Municipal Railway Signal Systems and the electric light and power systems of all Municipal Railway buildings.

During the fiscal year 1973-74, the Overhead Lines Section responded to 3,329 emergency calls. In addition to emergency calls, this section has a regular and extensive maintenance program for overhauling all overhead and underground facilities. This section operates with three shifts per day, seven days a week.

ENGINEERING DIVISION

The Engineering Division of Hetch Hetchy Water and Power provides engineering services for the Hetch Hetchy Project and the Transit Power Division. These services include the preparation of studies, reports, cost estimates, and plans and specifications for new construction, for replacement of structures and for items of major maintenance. Surveying, inspection of construction, contract administration and payment recommendations are provided for all construction work under Hetch Hetchy Water and Power. Work of unusual magnitude or which requires special knowledge and expertise is done by engineering consulting firms which have the necessary manpower and qualifications.

The Engineering Division is organized into five main sections: Structural and Civil, Electrical, Mechanical, Architectural, and Construction.

During the year, plans and specifications were prepared for the following work to facilitate and maintain Hetch Hetchy operations:

HH-442 - Motorized Valve Operators in San Joaquin Pipelines

Installation of Motor Operators for San Joaquin Pipeline Valves were completed and tested.

FELICIANO G. SOTTO
Engineering Assistant II
KWANG-TIEN (BOB) HOU
Associate Civil Engineer

HH-443 - Moccasin Dam Spillway - Construct Weir and Energy Dissipator

Plans and specifications were completed for constructing a weir to raise the level of Moccasin Reservoir nine feet, and to construct an energy dissipator at the foot of Moccasin spillway. By raising the maximum level of Moccasin Reservoir, a greater volume of water can be pushed through the San Joaquin Pipelines and Coast Range Tunnel. The energy dissipator will prevent erosion of the banks of Moccasin Creek when Moccasin Dam spills. Application for approval of design has been filed with the California Division of the Safety of Dams.

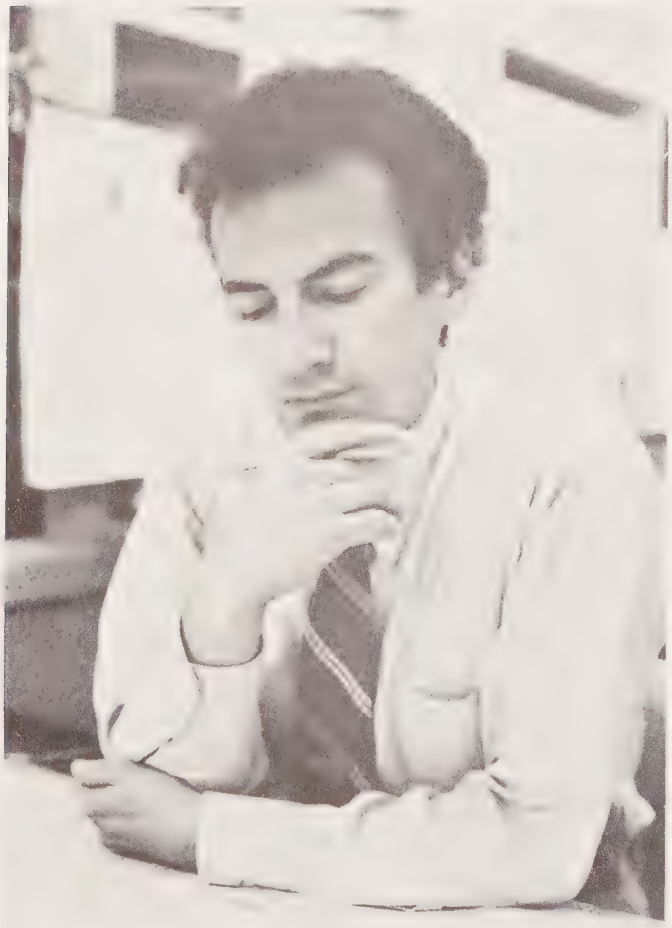
MOCCASIN DAM AND SPILLWAY

HH-454 - Moccasin Sewage Treatment Facilities

A package sewage treatment plant producing an odorless effluent and sludge has been planned to replace the existing septic tank system. A Federal "Clean Water Grant" has been applied for that should cover a substantial portion of the cost of construction of the project. Negotiations to acquire land for an effluent sprinkler field, as required by the State Water Quality Control Board, are underway.

HH-461 - Improvement to Domestic Water Supply - Moccasin

New pumps and chlorination system were installed in the new Moccasin Powerhouse. The new installation furnishes water to the storage tanks for domestic use and for fire fighting.



ROBERT N. SOTTIMANO
Engineering Assistant II

HH-467 - Holm Powerhouse
Penstock Protection

Work under this contract consisted of removing rock slides from the penstock trench; installing rock bolts and reinforced gunite on the cut slopes of the trench to prevent further rock fall, and painting the steel penstock where required.

HH-471 - Replace, Repair
and Paint Steel
Trolley Poles

A contract was let to replace, repair and paint steel trolley poles along Outer Mission Street. This work is part of a program to rehabilitate all steel trolley poles in the City.

HH-475 - San Joaquin Pipelines
Encasement at
Highway 99

A contract was awarded for constructing concrete encasement around the three

existing San Joaquin Pipelines located under the proposed State Highway 99 freeway crossings and ramps. The encasement will protect the pipelines from increased loads due to heavy traffic and the high embankment over the pipes. Cost of encasement was borne by the State Department of Transportation.

HH-477 - Moccasin Penstock Valve House

Plans and specifications are being prepared for the construction of a steel frame structure to enclose the butterfly valves at the head of Moccasin penstock. The structure will provide protection and security for the valves.

HH-480 - Moccasin Shops - Paint Room

Contract documents were prepared and request for bids advertised for constructing an additional bay on the south end of the machine shop building at Moccasin for use as a paint spray room. It includes a complete filtered air ventilation system and special lighting. The facility will permit spray painting of equipment to be done indoors.

HH-483 - Exterior Painting and Roof Preservative

Includes painting 23 cottages at Moccasin and application of wooden shingle roof preservative on six cottages at Moccasin and one at Tesla Portal.

HH-486 - Jones Point to Mather Road - Seal Coat

Under this contract, a seal coat was applied to the road from Jones Point to Mather to prolong the life of the road surface.

HH-487 - Moccasin Carpenter Shop - Sawdust Collection System

A contract was let to improve an inadequate sawdust collection system. It is now possible to operate several of the woodworking machines simultaneously and remove dust and chips from the work areas in conformance with safety requirements.

HH-490 - Moccasin Dam Spillway Stilling Basin - Exploratory Core Drilling

Exploratory core drilling was done under this contract to provide dependable data to be used in the final design of the stilling basin and related structures at the end of the present Moccasin Dam Spillway.

HH-495 - Road Repairs - Highway 120 to Cherry Dam

Work under this contract consisted of repairing 23 miles of road from State Highway 120 to Cherry Valley Dam. As an aftermath of the fire in the Granite Creek-Cherry Valley area in August 1973, lumber companies, salvaging timber from the burned area, utilized the Cherry Valley access road to a much greater degree than normal, necessitating the repairs. Costs were borne by the logging companies.

HH-499 - Re-roof Cottages and Garage

Includes re-roofing 12 cottages and one garage at Moccasin.

HH-501 - Repair and Waterproof Moccasin Buildings

Includes general repair prior to exterior painting and installation of new siding on five cottages.

ANGELITA RODELAS
Senior Clerk Stenographer

San Joaquin Pipeline No. 3

In March, it was necessary to remove and replace a section of 78-inch diameter prestressed concrete pipe which ruptured. In April, the full length of Pipeline No. 3 was inspected. The invert of the concrete pipe and of the cement-lined steel pipe shows some erosion which will require repair. The steel pipe portion with coal tar lining shows no signs of eroding.

Dam Earthquake Failure Study

Inundation maps and calculations were compiled for Priest Dam and Moccasin Dam, and were sent to the Office of Emergency Services (OES). These were prepared on request from OES, in accordance with Senate Bill 896 Seismic Safety.

TRANSIT POWER IMPROVEMENT PROGRAM

Work during Fiscal Year 1973-74, under the Power Improvement Program, was as follows:

1. Electrification Project

The joint venture firms of PBQ&D, Inc. and Gibbs & Hill, Inc. (PBGH) were selected to provide engineering design services for the installation of trolley wires and feeders in the Market Street Subway, and Twin Peaks and Sunset Tunnels, and modifications to existing streetcar trolley overhead wiring to permit operation of pantograph equipped vehicles.

2. Substation Project

A) Design Services

The firm of Bechtel, Inc. was selected to provide architectural and engineering design services for the construction of substation buildings and installation of rectifier equipment.

Bechtel completed a preliminary report on the first phase of substation design, and began detailed design work on Downtown, Civic Center, Church, Laguna Honda and Fillmore Substations. The 30% completion review documents for these substations were delivered to Hetch Hetchy in June.

Architectural designs prepared by Bechtel for the six new substation sites received Phase I approval from the Art Commission, City and County of San Francisco.

B) Substation Sites

The City Real Estate Department proceeded with acquisition of six new substation sites required for the Power Improvement Program.

A draft Environmental Impact Report, as required under the California Environmental Quality Act of 1970, was prepared by Hetch Hetchy and submitted for evaluation to the City Planning Department for all 14 substation sites required for the Power Improvement Program. After evaluation, the City Planning Department filed a negative Environmental Declaration covering all 14 sites.

Approval of two substation sites, namely Carl and Randolph, is pending before the City Planning Department for conformity to the City Master Plan. The other 12 sites have received approval of conformity to the Master Plan.

C) Equipment Purchase

Technical specifications and bid documents for a purchase contract for the furnishing and delivering of transit power substation equipment required to furnish power for the trolley coaches and new light rail vehicles of the San Francisco Municipal Railway were completed.

Bids for the transit power substation equipment were received by the City's Purchaser on March 29, 1974. The low bid of $5,896,496 submitted by ITE Imperial Corporation was approved by UMTA and the contract was awarded in June 1974.

3. Control and Communication Project

The firm of Systems Control, Inc. was selected to provide engineering design services for the transit power supervisory control system and for the subway maintenance telephone system.

4. Feeder Undergrounding

A) United Nations Plaza (DPW Contract 23,746)

Plans and specifications for the construction of underground duct lines beneath the United Nations Plaza were completed and transmitted to the Department of Public Works, City and County of San Francisco, for inclusion in their contract for construction of the plaza. The duct lines are for later installation of feeder cables from the new Civic Center substation to the trolley coach lines in the immediate areas.

B) Judah Street (DPW Contract 23,506)

Plans and specifications were prepared for the relocation of trolley poles and the undergrounding of overhead feeder cables on Judah Street, from 4th to 20th Avenues, for inclusion in the City's Department of Public Works' contract for street improvements and track reconstruction. Bids were received on April 10, 1974. The contract, including PIP work in the amount of $352,017, was awarded to the low bidder, Homer J. Olsen, Inc., San Francisco, California and work on the duct lines started on June 24, 1974.

ROBERT S. RUTHERFORD
Construction Inspector

C) Second and Mission Streets (HH Contract 489)

Plans and specifications were prepared and bids received for constructing a manhole and concrete encased duct banks in the intersection of Second and Mission Streets. The contract in the amount of $12,792 was awarded to the low bidder, John H. Thomas and Son, San Francisco, California in May 1974. Work was scheduled to start early in June 1974.

D) Market Street - 7th to 8th Streets (HH Contract 492)

Plans and specifications were prepared, and bids received, for constructing manholes and concrete-encased duct banks in Market Street between 7th and 8th Streets. Feeder cables from the new Civic Center Station to the Market Street Subway and to trolley coach lines in the immediate area will be installed in these ducts at a later date. The contract, in the amount of $145,762 was awarded to the low bidder, Underground Construction Co., Inc., San Leandro, California in April 1974. Construction started in May 1974.

E) 19th Avenue and Municipal Right-of-Way, St. Francis Circle to Junipero Serra Blvd. (HH Contract 493)

Plans and specifications were prepared and bids received for constructing manholes and underground duct banks in 19th Avenue and in the Muni Railway Right-of-Way between St. Francis Circle and Junipero Serra Blvd. The contract, in the amount of $168,281.25 was awarded to the low bidder, Underground Construction Co., Inc., San Leandro, California in April 1974. Construction started in May 1974.

F) Ecker and Stevenson Street Underground Duct System (HH Contract 496)

Plans and specifications for constructing manholes and duct banks in Ecker and Stevenson Streets were completed and were sent to UMTA for approval in June 1974. Feeder cables from the Downtown Substation to the Market Street Subway will be installed in these ducts under a later contract.

G) Market and Ecker Streets - Construct Manhole (Work Order)

A work order in the amount of $7,000 to Cahill Construction Company, San Francisco, California, to construct a reinforced concrete manhole structure at Market and Ecker Streets, was approved by UMTA on July 1, 1974. Work will commence early in July 1974.

H) Fillmore Street - Hayes to Pine Underground Power Facilities (HH Contract 491)

Plans and specifications for the installation of underground power facilities on Fillmore Street between Hayes and Pine Streets were completed in June 1974. Plans and specifications for this contract, which will include the construction of manholes, underground ducts and installation of feeder cables will be sent to UMTA for approval in July 1974.

I) Junipero Serra Blvd. Track Reconstruction and Landscaping (MR Contract 595R)

Plans and specifications for this joint TIP/PIP project, which include the construction of manholes and underground duct lines for the Power Improvement Program, were transmitted to TIP for inclusion in MR Contract 595R for Junipero Serra Blvd.

JANE CHEE
Senior Clerk Typist

Track Reconstruction and Landscaping. Feeder cables will be installed in these duct lines under HH Contract 517, Junipero Serra Blvd. - St. Francis Circle to Ocean Avenue.

RAYMOND G. MILLER, Construction Engineer
WESLEY J. BRAA, Associate Civil Engineer

J) Ocean and Phelan Avenues Rechannelization (DPW Contract 23,727)

Work commenced on plans for the relocation of trolley poles and the overhead trolley wire system and the undergrounding of feeder cables which will be included, along with Muni Railway streetcar track relocation and rerailing in a Department of Public Works contract for Ocean and Phelan Avenue rechannelization.

K) Ocean Avenue - Junipero Serra Blvd. to Phelan Avenue (HH Contract 502)

Work commenced on the preparation of plans and specifications for constructing manholes and underground duct banks in Ocean Avenue between Junipero Serra Blvd. and Phelan Avenue. Feeder cables will be installed in these duct banks under a later contract.

L) "M" Line - Junipero Serra Blvd. to Plymouth Street (HH Contract 519)

Work commenced on the preparation of plans and specifications for constructing manholes and underground duct banks in 19th Avenue, Randolph Street, Orizaba Avenue and Broad Street between Junipero Serra Blvd. and Plymouth Street. The duct lines are for the later installation of feeder cables.

M) Manhole Frames and Covers

Specification and bid documents were prepared for a contract for the purchase of approximately 100 sets of manhole frames and covers to be used for duct line contracts.

Bids were received in January 1974. The contract in the amount of $25,810 was awarded to Phoenix Iron Works on March 21, 1974.

N) Other Work

Preliminary engineering and plans and specifications are proceeding for duct lines and feeder undergrounding in accordance with the requirements of the Program. Work commenced on the preparation of technical specifications and bid documents for a purchase contract for insulated copper feeder cable. This cable will be installed under later contracts in duct lines now under construction and duct lines to be constructed.

5. Overhead Line Work

A) Installation of San Jose Avenue Storage Track Trolley System (HH Contract 488)

Plans and specifications were completed and bids were received for a contract for construction of streetcar overhead wiring for the new temporary storage track at the Ocean Avenue Yard constructed under Contract MR-604 of the Transit Improvement Program. The contract for HH Contract 488, which is funded under TIP Grant CA-03-0043 was awarded to the low bidder, L. K. Comstock & Company, Inc., San Francisco, California in the amount of $10,800. Construction work was completed in February 1974.

B) Junipero Serra Blvd. - St. Francis Circle to Ocean Avenue (HH Contract 517)

Work commenced on preparation of plans and specifications for trolley pole replacement and overhead trolley wire installation on Junipero Serra Blvd. from St. Francis Circle to Ocean Avenue. Under this contract, which will include street lighting work and will immediately follow the track reconstruction and landscaping contract, MR 595R, feeder cables will be installed in the duct lines constructed in MR 595R; connections to trolley wire will be made, new trolley poles will be installed, and the existing overhead facilities will be disconnected and removed.

C) Trolley Wire - Purchase Contract

Work commenced on preparation of technical specifications and bid documents for the purchase of bronze trolley wire to be used in future overhead modification contracts.

D) Other Work

Preliminary engineering and plans and specifications are proceeding for overhead modification contracts in accordance with the requirements of the program.

6. Miscellaneous

A) Coordination meetings of the joint staffs of Muni Railway, Transit Improvement Program and the Hetch Hetchy Power Improvement Program were held monthly.

ARMY STREET CIRCLE

STREET LIGHTING

General

The lighting of public streets within the City of San Francisco is provided by facilities which are 42.1% owned by the City; 56.0% owned by the Pacific Gas and Electric Company, and 1.9% jointly owned. In the underground areas, where the economic advantage of City ownership is greatest, 86.5% of the lights are City-owned. Five years ago the corresponding figure was 75.5%.

In fiscal 1933-34, the cost for street lighting was $1.25 per capita; last year, with approximately thirty times as much light on the streets and public thoroughfares, the cost per capita was approximately $1.83.

Maintenance and repair of City-owned installations was performed under two contracts. One provided for group replacement of lamps in accordance with schedules developed by the Bureau. A second contract covered work required for repair of damaged and defective equipment, painting and miscellaneous maintenance.

Under contract, the Pacific Gas and Electric Company furnished street lighting service as directed, including the furnishing, maintenance and operation of Company-owned facilities. Certain services were provided also for City-owned facilities, including switching and control, replacement of individual lamps and globes and emergency work required during other than normal working hours. Electric energy for all City and Company-owned street lighting operation was supplied by the Hetch Hetchy power system.

Engineering

The Bureau reviews, recommends changes, approvals or rejections of, and correlates all street lighting installations, including that done by the Department of Public Works, the Pacific Gas and Electric Company, the Bay Area Rapid Transit District, the State of California, subdividers, etc.

During the fiscal year 1973-74, 16 street lighting contracts, involving a total of 506 new street lights, were approved by the Public Utilities Commission. Plans were submitted for approval only after careful checking to determine that illumination will exceed the minimum requirements established by the American National Standards Institute; and that all materials used, and manner of installation, meet with the applicable local, state and federal rules, regulations and statures governing the installation of electrical work.

RICHARD L. BIGNARDI
Electrical Engineering Assistant II

MARKET STREET
PATH OF GOLD

ROBERT S. KWONG
Electrical Engineering Assistant II
NELVIN JOHNSON
Account Clerk

Operation and Maintenance

As of June 30, 1974, a total of 36,991 City-owned and Company-owned street lights were in service in public streets, parks, viaducts, over crossings, tunnels and underpasses. A summary of the number and types of units in service at the end of the fiscal year is shown in Appendix Table 14.

A total of $1,269,225 was expended for operation, maintenance and repair of the street lighting system. Of the total cost, $12,197 was paid by the State for its share of the operation and maintenance of street lighting at intersections on City streets, which are part of the State highway system.

During the fiscal year, there were 145 accidents involving damage to City-owned street lighting property. Investigation was made, as soon as possible, to remove hazards to the public, and obstructions to traffic. Total cost of repairs to damaged City-owned street lighting property was $74,582. Every effort was made to secure reimbursement for damages incurred from responsible parties. Previous experience indicates that approximately three-fourths of the repair costs will be recovered.

Complaints

During the year, 80 complaints requiring field investigation were received and acted upon. These complaints concerned inadequate illumination, objectionable glare in windows, and requests for temporary and permanent relocation of street lighting poles.

Improvements

During the fiscal year 1973-74, a total of 450 new City-owned street lights were placed in service at a cost of $550,000. Improvements were financed by State Gasoline Tax and the 1972 Street Lighting Bond Issue, as indicated in Appendix Tables 16 and 17.

UTILITY SERVICES TO MUNICIPAL DEPARTMENTS

General

Electric energy supplied to municipal departments is generated on the Hetch Hetchy power system, and delivered to various service points by transmission and distribution facilities of Pacific Gas and Electric Company under a wheeling contract. Natural gas and steam supplied to municipal departments are furnished by the Pacific Gas and Electric Company under a service contract.

Municipal Consumption of Electricity, Gas and Steam

During the fiscal year 479,717,297 kilowatthours of electrical energy were consumed through 979 municipal accounts at an expenditure of $4,920,136. Of the above, 158,017,411 kilowatthours of energy were supplied to the San Francisco International Airport for resale to tenants. Natural gas consumption was 17,882,381 therms through 550 accounts at a cost of $1,339,486. One account consumed 1,501,784 pounds of steam at a cost of $3,087.

There were four increases in gas rates last year which increased the cost to municipal accounts by approximately $81,175.

A summary of consumption and expenditures for these commodities is shown in Tables 12 and 13.

Energy Conservation

As stated above, electrical consumption during the second half of the fiscal year was down, as compared to the same period for the previous year. This was the result of the efforts of the Mayor's Energy Conservation Committee and the resultant cooperation of City employees in general. Normally, an increase of 8.6 percent per year can be expected.

Gas consumption decreased by 7.8 percent during the last six months of the fiscal year when a 3.5 percent increase would normally be expected.

APPENDIX

TABLE 1

HETCH HETCHY WATER AND POWER

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES (INCLUDING ENCUMBRANCES)

FISCAL YEAR 1973-74

OE	DESCRIPTION	BUDGET	ACTUAL	-UNDER, OVER
110	Permanent Salaries	$ 688,149	$ 626,232	$ -61,917
111	Overtime	13,520	11,497	- 2,023
112	Holiday Pay	5,427	4,027	- 1,400
113	Extended Work Week	2,796	1,740	- 1,056
120	Temporary Salaries	47,840	41,753	- 6,087
130	Wages	1,261,320	1,236,513	-24,807
139	Wages - Gardeners	44,018	41,691	- 2,327
200	Contractual Service	100,895	101,468	573
216	Maint. and Repair of Auto Equipment	14,000	12,552	- 1,448
231-1	Purchase of Power for Resale	600,000	406,615	-193,385
232-2	Service Charge for Transm. and Dist.	2,355,200	2,205,701	-149,499
251	Subsistence of Employees	9,500	1,724	- 7,776
300	Materials and Supplies	135,810	168,964	33,154
640	Water Rights and Damage Claims	12,000	12,000	-0-
641	Hydrography	37,000	36,255	- 745
801	Accident Compensation	16,500	17,490	990
804	Claims	500	-0-	- 500
812	Fidelity Insurance	72	72	-0-
813	Automobile Insurance	6,075	8,043	1,968
814	Fire Insurance	10,382	7,184	- 3,198
815	Miscellaneous Insurance	12,241	12,241	-0-
853	Assessments Paid to Other Districts	66,100	19,214	- 46,886
854	Membership Dues	4,014	4,283	269
855	Fees to U.S. Gov't. - Raker Act	30,000	30,000	-0-
856	Maint. Roads and Trials - Raker Act	15,000	13,196	- 1,804
860	Retirement Allowance	331,200	293,523	- 37,677
862	Social Security	101,500	87,105	- 14,395
865	Health Service System	20,297	19,419	- 878
870	Taxes	470,743	470,743	-0-
880	Rental - Transmission Lines and Offices	114,000	114,000	-0-
900	Services of Other Departments	783,796	783,796	-0-
	TOTAL OPERATION AND MAINTENANCE	$ 7,309,895	$ 6,789,041	-520,854
400	Equipment	34,897	34,166	- 731
500	Additions and Betterments	119,600	119,600	-0-
700	Reconstruction and Replacement	215,400	215,400	-0-
800	Bond Interest and Redemption	9,321,139	9,319,995	- 1,144
	TOTALS	$17,000,931	$16,478,202	$ -522,729

TABLE 2

HETCH HETCHY WATER AND POWER

TAXES

FISCAL YEAR 1973-74

Tax Levying Bodies	Assessed Value	Total Amount of Taxes
Alameda County	$ 1,975.00	$ 214.58
San Joaquin County	37,875.00	4,219.02
San Mateo County	3,240.00	332.48
Stanislaus County	103,850.00	9,529.42
Tuolumne County	5,100,245.00	455,097.84
Banta-Carbona Irrigation District	3,233.80	139.05
Oakdale Irrigation	24,640.00	1,108.80
West Stanislaus Irrigation District	1,700.00	102.00
	$5,276,758.80	$470,743.19

TABLE 3

TRANSIT POWER DIVISION

MOTIVE POWER SECTION - SUBSTATIONS

Substation	Type (a)	Date Installed	No. of Units	KW Size	Fiscal Year 1973-74 Max. Load in KW	Fiscal Year 1973-74 KWH Converted to 600 V d-c
Bryant	M-G	1910	3	1500	2660	7,759,200
	M-G	1910	(b)2	1500		
Turk	M-G	1910	3	1500	3866	9,057,000
	M-G	1910	(b)2	1500		
Downtown	SC	1921	2	2000	3516	8,266,800
	SC	1924	1	3000		
Eighth Avenue	SC	(c)1921	1	1500	1472	4,170,500
	SC	(c)1921	(b)1	1500		
	SC	1924	1	2000		
West Portal	MAR	1951	1	2000	2288	6,062,000
Outer Mission	MAR	1953	1	750	935	2,667,000
Geneva	M-G	1910	3	1500	1880	167,900
						28,150,400

Notes: (a) Type of Conversion Equipment:
M-G = Motor - Generator
SC = Synchronous Converter
MAR = Mercury Arc Rectifier

(b) Indicates units that are not serviceable. Units have not been repaired because of the high cost and because they are not needed to carry the present load. Also, it is planned to replace the conversion equipment with modern silicon rectifiers in the near future.

(c) Units were originally installed at Washington and Mason in 1914 and were moved to Eighth Avenue in 1921.

TABLE 4

HETCH HETCHY WATER AND POWER

TRANSIT POWER DIVISION

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES

FISCAL YEAR 1973-74

OE	DESCTIPTION	BUDGET	ACTUAL	UNDER, OVER
110-1	Permanent Salaries	$ 67,829	$ 57,770	- 10,059
130-1	Wages	1,023,758	897,376	- 126,382
300-1	Materials and Supplies	50,050	34,111	- 15,939
801-1	Accident Compensation	23,500	12,650	- 10,850
860-1	Retirement Allowances	143,229	126,937	- 16,292
862-1	Social Security	36,540	38,226	- 1,686
865-1	Health Service System	7,307	8,498	- 1,191
900-1	Services of other Departments	151,766	151,766	-0-
	TOTAL OPERATION AND MAINT.	$1,503,979	$1,327,334	- 176,645
400	Equipment	3,815	3,815	-0-
500-1	Additions and Betterments	11,900	11,900	-0-
700-1	Reconstruction and Replacements	3,000,000	3,000,000	-0-
	TOTAL	$4,519,694	$4,343,049	- 176,645

TABLE 5

HETCH HETCHY WATER AND POWER

SUMMARY OF RECEIPTS AND EXPENDITURES

FISCAL YEAR 1973-74

RECEIPTS	BUDGET	ACTUAL	-UNDER, OVER
Revenue from Sale of Electrical Energy	$ 13,900,000	$ 14,104,677	$ 204,677
Revenue from Sale of Water and Standby Charge, SFWD	6,000,000	6,000,000	-0-
Other Revenue	80,000	145,371	65,371
	$ 19,980,000	$ 20,250,048	$ 270,048
EXPENDITURES			
Total Expenditures	$ 21,520,625	$ 20,821,251	$ -699,374

TABLE 6
HETCH HETCHY WATER SUPPLY

PRECIPITATION, RUNOFF, STORAGE AND DELIVERY
AS OF JUNE 30 BY FISCAL YEARS

	Normal	1969-70	1970-71	1971-72	1972-73	1973-74
SEASON PRECIPITATION (INCHES)						
Hetch Hetchy	34.18	35.07	29.95	24.84	35.97	38.46
Lake Lloyd	46.87	51.95	41.94	32.77	46.03	52.45
Approx. Percent of Normal	100%	108%	89%	71%	102%	112%
WATERSHED RUNOFF (ACRE-FT.) (a)						
Hetch Hetchy	731,553	889,700	681,600	584,400	780,798	870,104
Lake Lloyd)						
Lake Eleanor)	414,136	518,400	409,100	331,800	447,358	525,904
Total	1,153,623	1,408,100	1,090,700	916,200	1,228,157	1,396,008
Approx. Percent of Normal		122%	95%	79%	106%	127%
RESERVOIR STORAGE (ACRE-FT.) (a)	No-Spill Capacity					
Hetch Hetchy	360,360	357,208	356,617	324,530	362,736	360,163
Lake Lloyd	268,800	243,854	199,983	151,653	217,872	268,284
Lake Eleanor	27,100	27,016	27,403	2,110	27,016	26,726
Total	656,260	628,078	584,003	478,293	607,624	655,173
DELIVERY TO SFWD (ACRE-FT.) (a) (b)						
Average per day		565	578	702	585	532
Maximum per day		856	748	856	850	850
Total for fiscal year		206,514	210,992	257,046	213,684	193,518

Total since operation of Hetch Hetchy Aqueduct began in 1934.

NOTES: (a) One acre-foot equals 325,900 gallons or approximately 1/3 million gallons.
(b) Includes delivery to Livermore site, U. S. Atomic Energy Commission.

TABLE 7
HETCH HETCHY POWER SYSTEM

ELECTRIC ENERGY GENERATED, PURCHASED, AND DISTRIBUTED
FISCAL YEAR 1973-74

PLANT DATA	Nameplate Rating (Kilowatts)	Capability (Kilowatts)	Annual Plant Factor - %
Moccasin Powerhouse	90,000	104,000	61.0
Dion R. Holm Powerhouse	135,000	150,000	62.4
Robert C. Kirkwood Powerhouse	67,500	85,000	82.9
Total	292,500	339,000	
ENERGY GENERATED AND PURCHASED (KILOWATT-HOURS)			
Gross Generation			
Moccasin Powerhouse		555,300,000	
Dion R. Holm Powerhouse		819,993,000	
Robert C. Kirkwood Powerhouse		617,557,000	1,992,850,000
Station Service			
Moccasin Powerhouse		881,400	
Dion R. Holm Powerhouse		1,125,710	
Robert C. Kirkwood Powerhouse		768,600	2,775,710
Net Generation			1,990,074,290
Supplementary Energy			
"Bank" Withdrawal*		36,435,281	
Purchase (PG&E Co.)		44,401,773	80,837,054
Total			2,070,911,344
ENERGY DISTRIBUTED (KILOWATT-HOURS)			
Sales			
Municipal Accounts		482,482,697	
Modesto Irrigation District		787,392,000	
Turlock Irrigation District		302,784,000	
Kaiser Cement and Gypsum Corporation		156,720,000	
Kaiser Aluminum and Chemical Corporation		31,320,000	
Norris Industries, Inc.		22,502,016	
Lockheed Missiles and Space Company, Inc.		39,556,800	
Miscellaneous Customers		733,633	1,823,491,146
Non-Revenue			
Project Use		3,266,691	
"Bank" Deposit*		130,908,552	134,175,243
Losses			
Hetch Hetchy System		37,706,350	
PG&E System (Municipal and Industrial Accounts)		75,538,605	113,244,955
Total			2,070,911,344

*In accordance with letter-agreement between City and PG&E Co. dated April 10, 1973.

TABLE 8

HETCH HETCHY POWER SYSTEM

COMPARATIVE ELECTRIC ENERGY SALES TO CUSTOMERS
FISCAL YEARS 1972-73 AND 1973-74
(Nearest 100,000 Kilowatthours)

CUSTOMER	1972-73	1973-74
Municipal Accounts		
International Airport	216,800,000	198,700,000
Municipal Railway	61,700,000	63,600,000
Public Works	26,400,000	26,000,000
Street Lighting	45,400,000	45,500,000
Unified School District	38,400,000	37,800,000
Water Department	44,400,000	40,400,000
Other City Departments	75,200,000	70,500,000
Modesto Irrigation District	858,800,000	787,400,000
Turlock Irrigation District	421,500,000	302,800,000
Kaiser Cement and Gypsum Corp.	145,400,000	156,700,000
Kaiser Aluminum and Chemical Corp.	31,500,000	31,300,000
Norris Industries, Inc.	22,300,000	22,500,000
Lockheed Missile & Space Co., Inc.	-	39,600,000
Miscellaneous Customers	800,000	700,000
TOTAL	1,988,600,000	1,823,500,000

TABLE 9

HETCH HETCHY POWER SYSTEM

COMPARATIVE GROSS REVENUE RECEIVED FROM SALE OF ELECTRIC ENERGY
FISCAL YEARS 1972-73 AND 1973-74
(Nearest $1,000)

CUSTOMER	1972-73	1973-74
Municipal Accounts		
International Airport	$ 1,781,000	$ 1,666,000
Municipal Railway	623,000	640,000
Public Works	319,000	321,000
Street Lighting	480,000	481,000
Unified School District	572,000	560,000
Water Department	402,000	376,000
Other City Departments	933,000	902,000
Modesto Irrigation District	5,069,000	4,510,000
Turlock Irrigation District	2,601,000	1,696,000
Kaiser Cement and Gypsum Corp.	1,348,000	1,773,000
Kaiser Aluminum and Chemical Corp.	305,000	377,000
Norris Industries, Inc.	220,000	225,000
Lockheed Missile & Space Co., Inc.	-	483,000
Miscellaneous Customers	9,000	9,000
TOTAL	$14,662,000	$14,019,000

TABLE 10

HETCH HETCHY POWER SYSTEM

ELECTRIC ENERGY GENERATED, PURCHASED, AND DISTRIBUTED BY FISCAL YEARS --- KILOWATT-HOURS

	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74
NET GENERATION						
Moccasin Powerhouse	465,854,212	493,702,900	531,070,800	533,978,200	542,886,200	554,418,600
Dion R. Holm Powerhouse	944,664,850	887,037,320	892,230,400	808,515,430	653,141,570	818,867,290
Robert C. Kirkwood Powerhouse	598,681,120	615,542,120	630,874,100	614,151,930	601,147,890	616,788,400
Subtotal	2,009,200,182	1,996,282,340	2,054,175,300	1,956,645,560	1,797,175,660	1,990,074,290
SUPPLEMENTAL ENERGY						
"Bank" Withdrawal"*	81,906,642	191,365,500	133,964,745	46,360,466	0	36,435,281
Purchase (PG&E Co.)	40,798,879	0	46,097,953	108,734,434	351,288,448	44,401,773
Subtotal	122,705,521	191,365,500	180,062,698	155,094,900	351,288,448	80,837,054
TOTAL	2,131,905,703	2,187,647,840	2,234,237,998	2,111,740,460	2,148,464,108	2,070,911,344
DISTRIBUTION						
Sales						
Municipal Accounts	412,201,831	427,168,499	458,127,155	478,105,789	508,259,909	482,482,697
Modesto Irrigation Dist.	597,864,000	637,972,000	728,371,000	796,740,000	858,816,000	787,392,000
Turlock Irrigation Dist.	263,616,000	271,156,800	321,456,000	360,619,200	421,484,000	302,784,000
Kaiser Cement & Gypsum	173,061,180	168,705,080	152,736,000	152,127,205	145,368,000	156,720,000
Kaiser Aluminum & Chemical	30,744,000	39,240,000	39,549,000	33,996,000	31,521,600	31,320,000
Norris Industries, Inc.	35,914,140	35,721,216	24,033,485	17,664,768	22,325,760	22,502,016
Dow Chemical Company	23,582,132	---	---	---	---	---
Hercules, Inc.	97,776,000	92,844,000	94,662,000	57,906,000	---	---
California Ammonia Co.	101,720,736	103,020,000	104,280,480	80,876,760	---	---
Air Products & Chemicals	32,930,496	34,617,984	32,653,056	---	---	---
Valley Nitrogen Producers	28,675,920	124,884,480	108,631,560	---	---	---
Lockheed Missile	---	---	---	---	---	39,556,800
Miscellaneous Customers	1,016,562	664,093	745,614	759,065	847,858	733,633
Non-Revenue						
Project Use	3,787,748	3,744,004	4,101,136	4,287,512	4,003,796	3,266,691
"Bank Deposit"*	205,895,527	135,151,010	47,826,652	9,756,928	28,985,698	130,908,552
Losses	102,119,431	112,758,674	117,064,260	118,901,233	126,851,487	113,244,955
TOTAL	2,131,905,703	2,187,647,840	2,234,237,998	2,111,740,460	2,148,464,108	2,070,911,344

*In accordance with letter - agreement between City and PG&E Co. dated April 10, 1973.

TABLE 11
BUREAU OF LIGHT, HEAT AND POWER

COMPARISON OF BUDGETED AND ACTUAL EXPENDITURES AND RECEIPTS
(INCLUDING ENCUMBRANCES)

FISCAL YEAR 1973-74

OE	DESCRIPTION	BUDGET	ACTUAL	-UNDER +OVER
	EXPENDITURES			
110	Permanent Salaries	$ 159,546	$ 136,584	- 22,962
111	Allowance for Overtime	525	506	- 19
112	Holiday Pay	362	202	- 160
200	Contractual Services	1,125	754	- 371
231	Lighting and Heating of Public Buildings - General	1,368,425	1,276,954	- 91,471
231-1	Lighting and Heating of Public Bldgs. - Special Fund	4,925,495	4,508,240	-417,255
231-2	Lighting of Public Streets - Pacific Gas and Electric Co.	580,000	577,467	- 2,533
231-3	Lighting of Public Streets - Hetch Hetchy	477,000	469,163	- 7,837
231-4	Lighting of Public Streets - Calif. Division of Highways	1,200	1,200	-0-
300	Materials and Supplies	425	376	- 49
400	Equipment	500	498	- 2
813	Auto Insurance	450	257	- 193
860	Retirement Allowance	19,688	18,455	- 1,233
862	Social Security	6,585	4,250	- 2,335
865	Health Service System	2,720	2,169	- 551
954	EDP - PUC Data Processing	12,000	12,000	-0-
	TOTAL	$ 7,556,046	$ 7,009,075	-546,971
	RECEIPTS			
	Interfund Receipts*	$ 6,024,176	$ 5,617,174	-407,002
	Ad Valorem Taxes	1,531,870	1,391,901	-139,969
		$ 7,556,046	$ 7,009,075	-546,971

WORK ORDER APPROPRIATIONS FROM ROAD FUND

DESCRIPTION	TOTAL FUNDS	EXPENDITURE	-UNDER +OVER
Maintenance and Repair of Street Lighting Installations	$ 174,200	$ 173,389	- 811

*Transfers from other departments.

TABLE 12
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURE FOR ELECTRICITY FOR MUNICIPAL PURPOSES
FISCAL YEAR 1973-1974

DEPARTMENT	NO. OF ACCOUNTS	CONSUMPTION KILOWATT-HOURS	EXPENDITURES
Adult Probation	1	13,598	342
Art Museum	1	991,360	11,346
Auditorium and Brooks Hall	1	4,334,600	47,363
Child Care Centers	11	242,010	5,560
City Planning	1	72,940	1,507
De Young Museum	1	2,899,200	28,593
Disaster Corp.	1	7,459	1,998
Electricity	6	420,341	7,461
Farmer's Market	1	23,040	547
Fire (a)	61	2,878,946	59,423
Hassler Health Home	1	199,800	3,119
Health	33	14,548,323	142,709
Hetch Hetchy	6	131,928	3,578
Hidden Valley Ranch	1	952,800	10,969
International Airport (b)	8	198,724,027	1,666,442
Junior College District	14	7,375,005	78,812
Legion of Honor	1	464,800	6,300
Library	31	2,707,717	45,225
Log Cabin Ranch	13	386,067	10,796
Municipal Railway	39	63,609,150	640,201
Parking Authority	18	156,712	3,858
Police	17	883,240	17,884
Public Building	9	15,716,294	139,026
Public Works	82	25,629,891	315,626
Purchasing	5	491,020	7,485
Real Estate	1	169,280	2,554
Recreation and Park	206	10,262,058	179,177
Recreation and Park - Candlestick Park	2	2,100,160	47,229
Recreation and Park - Yacht Harbor	33	1,308,140	28,078
Sheriff	3	1,589,440	16,027
Social Services	7	1,131,209	15,827
Street Lighting Operations (.003)	1	45,513,192	469,163
Unified School District	229	30,457,054	481,238
War Memorial	1	1,276,640	16,169
Water	126	40,332,708	375,507
Youth Guidance	3	1,403,551	14,600
TOTAL MUNICIPAL DEPARTMENTS	975	479,403,700	4,901,739
Academy of Sciences	2	2,765,400	26,220
State of California: Street Lighting	1	(c)	12,197
Traffic Devices	1	313,597	6,200
TOTAL FROM HETCH HETCHY	979	482,482,697	4,946,356
Fire Department, For Resale to Fort Mason	1	686,102	10,047
GRAND TOTAL	980	483,168,799	4,956,403

Notes: (a) Electricity purchased for resale to Fort Mason excluded.
(b) Includes 158,017,411 KWH resold at Commercial rates for 1,378,555 Airport tenants.
(c) Included under Street Lighting Operations.

TABLE 13
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURE FOR GAS AND STEAM FOR MUNICIPAL PURPOSES
FISCAL YEAR 1973-1974

NATURAL GAS

DEPARTMENT	NO. OF ACCOUNTS	CONSUMPTION THERMS	EXPENDITURE
Adult Probation	1	1,130	113
Auditorium and Brooks Hall	2	854	104
Child Care Centers	10	28,308	2,548
City Planning	1	4,558	399
De Young Museum	1	285,244	23,373
Disaster Corp.	1	398	44
Electricity	2	47,673	3,951
Farmer's Market	1	671	73
Fire	58	697,070	57,250
Hassler Health Home	3	31,459	2,660
Health	30	4,896,271	307,932
Hetch Hetchy	2	1,324	165
International Airport	6	1,568,714	106,512
Junior College District	9	842,358	67,082
Legion of Honor	1	60,614	5,014
Library	28	106,252	9,265
Municipal Railway	11	328,584	30,049
Police	10	48,791	4,273
Public Buildings	5	1,373,045	96,485
Public Works	15	273,883	26,600
Purchasing	3	60,870	4,993
Recreation and Park	103	1,213,125	101,078
Recreation and Park - Candlestick Park	1	113,525	9,331
Registrar of Voters	1	8,072	696
Sheriff	2	446,591	36,916
Single Men's Rehabilitation Center	1	31,409	2,616
Social Services	4	72,105	6,008
Unified School District	219	4,482,678	365,288
War Memorial	3	241,279	19,915
Water	12	156,292	13,235
Youth Guidance	4	459,234	35,518
TOTAL MUNICIPAL DEPARTMENTS	550	17,882,381	1,339,486

STEAM

(Does not include steam generated by City)

DEPARTMENT	NO. OF ACCOUNTS	CONSUMPTION THERMS	EXPENDITURE
Social Services	1	1,501,784	3,087

TABLE 14
BUREAU OF LIGHT, HEAT AND POWER

STREET LIGHTS IN SERVICE
JUNE 30, 1974

SIZE & TYPE OF LAMP	COMPANY-OWNED	JOINTLY-OWNED	CITY-OWNED	TOTAL
UNDERGROUND CONNECTED				
High Voltage Series Circuit				
1,000-Lumen Incandescent	---	22	---	22
2,500 " "	252	24	73	349
4,000 " "	1,051	129	1,569	2,749
6,000 " "	579	457	3,070	4,106
10,000 " "	439	21	546	1,006
23,000 " Fluorescent	---	---	---	---
400-Watt Mercury Vapor	5	43	170	218
1,000 " "	---	---	3	3
175-Watt Mercury Vapor	---	---	10	10
250 " "	2	---	---	2
Low Voltage Multiple Circuit				
1,000-Lumen Incandescent	---	---	107	107
2,500 " "	12	4	58	74
4,000 " "	187	2	104	293
6,000 " "	32	5	85	122
10,000 " "	10	---	13	23
5,500 " Fluorescent	---	---	38	38
23,000 " "	39	---	5	44
100-Watt Mercury Vapor	---	---	112	112
175 " "	43	---	3,323	3,366
250 " "	37	---	979	1,016
400 " "	303	---	4,701	5,004
700 " "	---	---	365	365
1,000 " "	---	---	137	137
400 " Lucalox	---	---	21	21
448 " Incandescent	---	---	15	15
OVERHEAD CONNECTED				
High Voltage Series Circuit				
2,500-Lumen Incandescent	1	---	---	1
4,000 " "	28	---	42	70
6,000 " "	---	---	---	---
Low Voltage Multiple Circuit				
2,500-Lumen Incandescent	9	---	---	9
4,000 " "	52	---	11	63
6,000 " "	8	---	1	9
175-Watt Mercury Vapor	14,756	---	1	14,757
250 " "	1,956	---	---	1,956
400 " "	924	---	---	924
TOTAL, JUNE 30, 1974	20,725	707	15,559	36,991
	56.0%	1.9%	42.1%	100%
TOTAL, JUNE 30, 1973	20,876	707	15,229	36,812
NET CHANGE DURING THE YEAR	-151	-0	+330	+179

TABLE 15
BUREAU OF LIGHT, HEAT AND POWER

EXPENDITURES FOR OPERATION AND MAINTENANCE OF STREET LIGHTING
FISCAL YEAR 1973-74

CONTRACTUAL SERVICE			
P. G. & E. Company			
Company-owned facilities (a)	809,288		
Jointly-owned facilities (a)	35,165		
City-owned facilities (b)	149,531	993,984	
Less deduction for energy component		416,531	577,453
Emergency service to City-owned facilities			3,821
Lease-Lite Corporation			
Group lamp replacement - City-owned facilities			46,819
MAHONEY ELECTRIC			
Maintenance and repair - City-owned facilities			
Routine maintenance		39,487	
Repair of damage caused by accidents (c)		38,684	
Repair of damage caused by equipment failure		27,890	
Repair of damage caused by vandals		2,248	108,309
MATERIAL AND SUPPLIES (FURNISHED BY CITY)			
Damage caused by accidents (c)		25,604	
Damage caused by equipment failure		7,889	
Damage caused by vandals		951	34,444
ELECTRIC ENERGY (HETCH HETCHY)			
45,545,717 kWh @ $0.01345 less 21% discount			483,946
TOTAL EXPENDITURE			1,254,792
LESS AMOUNT PAID TO HETCH HETCHY FROM:			
Gas Tax Funds for State Highway routes		12,197	
Recreation and Park Dept. for off-street lighting		2,236	14,433
TOTAL NET EXPENDITURE			1,269,225
AVERAGE OPERATING COST			
Based on number of lights in service June 30, 1974, average total cost of operation, maintenance and repair per light per year:			34.31

NOTES: (a) Includes maintenance, repair, fixed charges and electric energy for Company-owned facilities.

(b) Includes replacement of individual lamps and broken glassware, service and switching charges, and electric energy.

(c) When responsible party is known, claim is filed for recovery of cost.

TABLE 16
BUREAU OF LIGHT, HEAT AND POWER
NEW CITY-OWNED STREET LIGHTING INSTALLATIONS
COMPLETED DURING FISCAL YEAR 1973-74

Locations	Number of Lights	Type of Lights *	Value
Financed by Bond Issues:			
25th Avenue - Fulton to Scenic Drive	63	M	$70.066
Anzavista Area	74	M	52.060
Potrero Area	53	M	62.724
Apparel City Area	77	M	51.464
TOTALS	267		236.314
Financed by State Gasoline Tax:			
Marina District - Part II Stage 2	39	M	63.925
California and Spruce Streets	4	M	4.800
South of Market - Contract 4	31	M	37.128
Golden Gate Heights - Contract 3	10	M	10.822
Bay Street - Jones to Taylor	4	M	8.326
Market Street Reconstruction - Contract 2A	12	L	38.428
Clay Street - Montgomery to Leidesdorff	4	M	6.854
La Salle Street - Mendell to Lane	4	M	7.136
Mendell Street - La Salle to Innes	12	M	15.197
Market Street - Ord to Burnett	-	-	5.825
Esmeralda Stairway	2	M	6.040
Harney Way Widening	9	M	10.814
Noe and Sanchez Streets	6	M	27.955
24th Street - Third to Tennessee	2	M	4.758
Digby and Everson Streets	-	M	5.014
Jennings Street - Evans to Arthur	10	M	13.742
TOTALS	149		266.764
GRAND TOTALS	416		503.078

* M = Mercury Vapor
* L = Lucalox

TABLE 17

BUREAU OF LIGHT, HEAT AND POWER

HISTORICAL COST OF CITY-OWNED STREET LIGHTING IMPROVEMENTS

Fiscal Year	Ad Valorem Taxes	Gasoline Taxes	Lighting Bonds	Property Owners	State Highway Dept.	Miscellaneous Sources*	Total
Prior to July 1, 1953	$ 1,748,675	$ 617,115	-	$576,404	$ 22,650	$ 477,651	$ 3,442,495
1953-54	142,151	22,181	-	23,495	2,274	1,239	191,340
1954-55	155,727	30,817	-	748	16,578	543	204,413
1955-56	15,704	48,620	-	2,484	19,181	1,360	87,349
1956-57	114,168	26,641	-	7,256	-	3,003	151,068
1957-58	2,501	64,942	-	18,199	4,142	-	89,784
1958-59	-	171,367	-	10,231	626	538	182,762
1959-60	-	100,126	-	35,874	10,242	4,083	150,325
1960-61	-	82,074	-	19,236	-	1,865	103,175
1961-62	-	200,113	-	116,376	24,550	7,993	349,032
1962-63	-	84,328	-	21,700	-	-	106,028
1963-64	-	340,108	-	32,556	6,000	-	378,664
1964-65	-	97,846	-	8,975	50,857	-	157,678
1965-66	-	474,673	$ 522,899	-	-	-	997,572
1966-67	-	111,164	188,312	5,000	-	-	304,476
1967-68	-	175,949	331,941	-	-	-	507,890
1968-69	-	374,229	616,722	-	40,250	-	1,031,201
1969-70	-	359,635	261,000	-	-	-	620,635
1970-71	-	490,031	1,550,442	-	-	-	2,040,473
1971-72	-	541,534	1,810,011	-	-	-	2,351,545
1972-73	-	415,614	-	-	-	-	415,614
1973-74	-	266,764	236,314	-	-	-	503,078
Totals	$ 2,178,926	$5,095,871	$5,517,641	$878,534	$197,350	$ 498,275	$ 14,366,597
Less: Cost of portions removed prior to fiscal year 1972-73						$ 1,538,373	
Cost of portions removed during fiscal year 1973-74						108,300	$ 1,646,673
Original cost of City-owned facilities in service on June 30, 1974							$ 12,719,924

* Includes WPA and PWA (1933-42). Boulevard Construction (1932-34), Municipal Railway, Recreation and Park Department and Housing Authority.

TABLE 18
HETCH HETCHY WATER AND POWER

CONSTRUCTION CONTRACTS
FISCAL YEAR 1973-74

Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
HH-442	Motorize Valves - San Joaquin Pipe Lines, Oakdale Portal & Tesla Portal Valve Houses	OBCO Contractors & Engineers	6- 1-71	(5-3-73) 6-25-74	28,280	4,448
HH-467	Repair Slides and Construct Slope Protection on Holm Penstock Trench Slopes	National Bridge Co.	8-20-73	12- 6-73	145,855	164,941
HH-470	Replacement of the Existing d-c Switchboard at O'Shaughnessy Dam	Slater Electric Co. of California	8-20-73	12-26-73	4,320	4,320
HH-471	Replace, Repair and Paint Trolley Poles on Mission Street	Abbett Electric Corp.	1- 7-74	-	30,021	15,375
HH-472	Construct Reinforced Concrete Floor at South Fork Maintenance Yard	George Reed, Inc.	6-11-73	7- 9-73	6,920	6,920
HH-473R	Install Standby Pump at Kirkwood Powerhouse	Brown Street Metal & Mechanical Inc.	7-16-73	9-14-73	5,800	5,800
HH-475	Construct Encasement to Protect San Joaquin Pipelines at the New Highway 99 Crossing	Chas.I. Cummingham Co.	11- 5-73	3-29-74	181,111	179,597
HH-476	Relocate Transmission Towers in the Path of Proposed Highway 99	Slater Electric Co. of California, Inc.	10-15-73	12-10-74	37,800	37,800
HH-478	Insulate Metal Buildings at Moccasin and Red Mountain Bar	Valley Asbestos Co.	1-21-74	3- 5-74	3,023	3,023
HH-481	Moccasin Houses - Ceiling Insulation	Sacarmento Insulation Contractor	3- 4-74	5- 2-74	6,230	5,973

TABLE 18 (Cont'd)
HETCH HETCHY WATER AND POWER

CONSTRUCTION CONTRACTS
FISCAL YEAR 1973-74

Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
HH-485C	Moccasin-Newark Transmission Line - Paint Steel Tower	C. C. Knight Painting	9-17-73	11-15-73	31,755	31,755
HH-486	Seal Coat - Jones Point to Mather Road	George Reed, Inc.	5-13-74	6-18-74	26,680	23,260
HH-487	Reconstruct Sawdust Collection System at Moccasin Carpenter Shop	Wright Sheet Metal, Inc.	12-24-73	1-31-74	1,957	1,957
HH-488	Installation of San Jose Ave. Storage Track Trolley System	L.K. Comstock, Inc.	1-14-74	2- 8-74	10,800	10,843
HH-490	Moccasin Spillway Stilling Basin Exploratory Core Drilling	Pitcher Drilling Co.	5-13-74	5-23-74	3,763	3,819
HH-492	Construct Underground Duct System, Market Street-7th to 8th	Underground Construction Co., Inc.	5-13-74	-	146,306*	48,532
HH-493	Construct Underground Duct System, 19th Ave. and MUNI Right-of-Way	Underground Construction Co., Inc.	5-13-74	-	172,366*	149,251
HH-495	Road Repairs - Highway 120 to Cherry Dam	George Reed, Inc.	5- 6-74	6-27-74	29,975	27,010
Emerg.	Grout Leaks - Tunnel & Dam	Pressure Grout Co.	3-12-73	8-10-73	50,000	15,214
Emerg.	Repair Leak - San Joaquin Pipeline No. 3	Hetch Hetchy	2-26-74	-	45,000	32,000
DPW #23,506	Construct Underground Duct System, Judah Street	Homer J. Olson, Inc.	6-10-74	-	355,281*	-

TABLE 18 (Cont'd)
HETCH HETCHY WATER AND POWER

CONSTRUCTION CONTRACTS
FISCAL YEAR 1973-74

Contract No.	Description	Contractor	Contract Time Started	Contract Time Completed	Original Contract Price	Value of Work Done During Fiscal Year
BARTD 1S3026	Civic Center Substation	Northwest Construction Co.	3-26-73	-	446,700	335,025
BARTD 1S0032	Church Street Substation	Fruin-Colnon Corp., Dravo Corp., & Rothschild & Raffin, Inc.	11-17-72	-	258,240	154,944
	Total Amount of Hetch Hetchy Contract Work Performed During Fiscal Year					$1,257,359

* Includes City Furnished Manhole Frames & Covers @ $272.30 ea.

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